

Online physiotherapy service: a literature review

Teleatendimento fisioterapêutico: uma revisão de literatura

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ABSTRACT

INTRODUCTION: With the emergence of the pandemic caused by COVID-19 (SARS-CoV-2), new public health security measures have been adopted, including the social distance. In this way, it became feasible that health professionals, including physiotherapists, act remotely, ensuring attention to their patients avoiding compromising the effectiveness of their work. **OBJECTIVES:** To verify the methods and strategies used for the online physiotherapy session and to analyze the main injuries treated and the benefits obtained through the treatments. **METHOD:** This is a literature review based on studies from nine electronic databases (Pubmed, Scielo, LILACS, Cochrane Library, SportDiscus, PEDro and Science Direct), in addition to the manual search. After a pre-selection of title and abstract, the studies were selected by exclusion (unviable methods for physiotherapy, treatments that are more specific and unreproducible rehabilitation strategies) and inclusion criteria (the study should expose a model of the online physiotherapy service and show current content). **RESULTS:** 5,964 studies were analyzed and after screening, 18 were selected to be included in this review. The online physiotherapy service was used mainly for the treatments of orthopedic and rheumatic disorders and were performed through online physiotherapy service systems as videoconference, phone calls, explanatory handouts, texting and apps combined with videoconference. The intervention period varied between 4 and 8 treatment weeks. **CONCLUSION:** The studies show effectiveness, reliability and validity of the online physiotherapy service on orthopedic and rheumatic disorders. Furthermore, this system provides benefits as a reduction of cost and waiting time and ease of access.

Keywords: Telemedicine, Telerehabilitation, Evaluation, Rehabilitation, Quarantine.

RESUMO

INTRODUÇÃO: Com a emergência da pandemia causada pela COVID-19 (SARS-CoV-2), foram adotadas novas medidas de segurança da saúde pública, incluindo a distância social. Desta forma, tornou-se viável que os profissionais de saúde, incluindo fisioterapeutas, actuassem à distância, assegurando a atenção aos seus pacientes, evitando comprometer a eficácia do seu trabalho. **OBJECTIVOS:** Verificar os métodos e estratégias utilizados na sessão de fisioterapia online e analisar as principais lesões tratadas e os benefícios obtidos através dos tratamentos. **MÉTODO:** Esta é uma revisão bibliográfica baseada em estudos de nove bases de dados electrónicas (Pubmed, Scielo, LILACS, Cochrane Library, SportDiscus, PEDro e Science Direct), para além da pesquisa manual. Após uma pré-selecção do título e resumo, os estudos foram seleccionados por exclusão (métodos inviáveis para fisioterapia, tratamentos mais específicos e estratégias de reabilitação não reprodutíveis) e critérios de inclusão (o estudo deve expor um modelo do serviço de fisioterapia online e mostrar o conteúdo actual). **RESULTADOS:** 5.964 estudos foram analisados e, após o rastreio, 18 foram seleccionados para serem incluídos nesta revisão. O serviço de fisioterapia online foi utilizado principalmente para o tratamento de distúrbios ortopédicos e reumáticos e foi realizado através de sistemas de serviço de fisioterapia online como videoconferência, chamadas telefónicas, folhetos explicativos, mensagens de texto e aplicações combinadas com videoconferência. O período de intervenção variou entre 4 e 8 semanas de tratamento. **CONCLUSÃO:** Os estudos mostram a eficácia, fiabilidade e validade do serviço de fisioterapia online sobre perturbações ortopédicas e reumáticas. Além disso, este sistema oferece benefícios como redução de custos e tempo de espera e facilidade de acesso.

Palavras-chave: Telemedicina, Telereabilitação, Avaliação, Reabilitação, Quarentena.

1 INTRODUCTION

With the COVID-19 (SARS-CoV-2) pandemic, several protection measures have emerged to contain the expansion of its transmission (WHO, 2020). In this scenario, Brazil and the world face an unprecedented historical emergency with serious consequences for public health and economic activity ¹. Thereby, physiotherapeutic treatments were interrupted in person. However, the inclusion of online services can provide support in this period, as it provides services remotely using the technology for its conduction ². Regarding the legality of online physiotherapy treatment services, the Regional Council of Physiotherapy and Occupational Therapy (CREFITO) authorized remote treatments, so that physiotherapy and occupational therapy patients do not put their health at risk by exposing themselves to face-to-face appointments.

To improve health care by electronic means, it is necessary that the population have access and ease of use to these means. According to the Federal Council of Physiotherapy and Occupational Therapy (COFFITO), we have three ways to carry out the online physiotherapy service with patients: teleconsultation, which is the inclusion of the new patient who needs physiotherapy during this period; telemonitoring, for those patients who were already being monitored, and who would continue with the treatment, but remotely at this time; and teleconsulting, which occurs when physiotherapists are qualified to provide online appointments for questions related to the current scenario of COVID-19.

Telehealth is considered a fundamental resource in atypical situations, given its ability to reduce the circulation and contamination of people and the spread of the disease. It also allows to guarantee the assistance to patients with pre-existing diseases and comorbidities who cannot attend health units due to the guidelines for reducing social interaction ¹, respecting the recommendations of the World Health Organization (WHO, 2020) to prevent the spread of the virus.

Given the above, this literature review aims to verify methods and strategies of online physiotherapy services, in addition to analyze the main injuries treated and their benefits leading to more people effective methods of online physiotherapy service.

2 METHOD

Verifying the necessity for this study and its objectives, the literature review methodology was adopted. The review steps were as follow: choice of the theme and the study objective; search of the problem definition to be investigated; choice of the writers; search in the electronic databases; establishment of inclusion and exclusion criteria; and discussion of the results with the conclusion identification.

Search strategy

The search was conducted in the electronic databases Pubmed, Scielo, LILACS, Cochrane Library, SportDiscus, PEDro e Science Direct with the descriptors “*Physiotherapy*” OR “*Service*” OR “*Rehabilitation*” AND “*Strategies*” AND “*Telesupervision*” OR “*Telemedicine*” OR “*Telemonitoring*”. Furthermore, a manual analysis was made in the references of the included manuscripts to complement the electronic search.

Inclusion and exclusion criteria

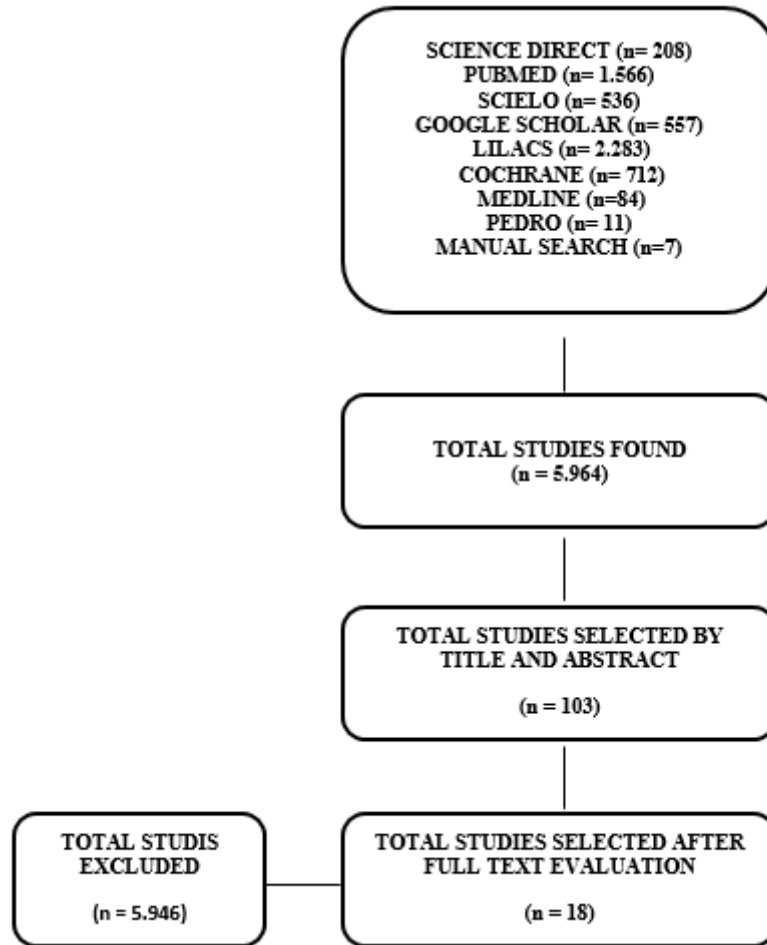
To be included, the studies should present an online physiotherapy service model and present current content according to the pre-established descriptors. There was not predilection for the year of publication, sample size, gender and age of the participants. Studies that didn't present viable methods for the online physiotherapy service, studies referring to the online physiotherapy service with more specific treatments needs, as respiratory and cardiovascular pathologies, studies that contained strategy for not reproducible online physiotherapy service were excluded.

The studies screening process was conducted by title, abstract and full text, performed by two evaluators (I.B and L.G.F) independently. Discrepancies were solved in consensus with the support of a third evaluator (C.C.C) when necessary.

3 RESULTS

The search in the electronic databases identified in total 5,964 studies. After analysis of titles and abstracts, 103 studies remained for full text evaluation. At the end of the selection process, 12 studies were included. Figure 1 shows a flow chart with the studies selection schematic process.

Figure 1. Flowchart of the results obtained from the search in the electronic databases.



Regarding the included studies, it was observed that they were published between the years of 2010³ and 2020⁴, being 75% clinical trials. All included studies used the online physiotherapy service in some injury or orthopedic disorder, such as subacromial impact syndrome⁵, total hip arthroplasty⁴, skeletal muscle disorder of the knee⁶, ankle³, or shoulder⁷, chronic neck⁸ and elbow⁹ pain, total knee arthroplasty^{10,11}, and rheumatologic disorders like: systemic sclerosis and rheumatoid arthritis¹², and knee osteoarthritis¹³.

Regarding the origin of the studies, it was observed that five studies are from Australia^{3,4,6,7,9}, two are from Canada^{11,14}, two are from Italy^{8,12}, one is from Spain⁵, one is from the United States¹⁰ and one is from South Africa¹³.

The online physiotherapy service method used varied between the studies. In this sense, 10 studies used videoconference^{3,5-7,9-11,14}, two opted for the mobile phone call^{8,13}, two for mobile app of online physiotherapy service^{3,12} and one for app combined with videoconference⁴. The studies intervention time varied between two⁸ and 12 weeks^{5,12}. The characteristics of the included studies are summarized in the Table 1.

Table 1. Characteristics of the included studies.

AUTHOR AND YEAR	GENERAL SUBJECT	STUDY DESIGN	METHOD	EVALUATED OUTCOMES	RESULTS	CONCLUSION
BINI; MAHAJA, 2017 ¹⁰	Online physiotherapy service after knee arthroplasty.	Clinical trial.	N= 51 OS tool: asynchronous video applied to a mobile device. Duration = not displayed. G1: physiotherapy intervention. G2: traditional outpatient physiotherapy.	Equivalence and satisfaction among patients in the online physiotherapy service based on asynchronous video meeting compared to traditional therapy in patients with total knee arthroplasty.	There was no statistically significant difference in any clinical outcome between groups. Satisfaction with care was similar.	The online physiotherapy services was not inferior when compared to traditional care. Patient satisfaction was high in both groups.
GIALANE LLA et al., 2017 ⁸	Online physiotherapy service for chronic cervical pain.	Clinical trial.	N= 100 OS tool: biweekly phone calls (nursing tutor). Duration= 6 months. G1: intervention with physiotherapy call center. G2: control; recommendations to continue exercising at home.	The effectiveness of online physiotherapy service supervised by doctors and nurses, when adhering to exercises at home and reducing neck pain.	Chronic cervical pain and disability decreased in both groups.	The online physiotherapy services can be an additional useful tool to assist doctors in the treatment of chronic cervical pain.
LADE et al., 2012 ⁹	Online service in the evaluation and diagnosis of musculoskeletal disorders of the elbow.	Cross-sectional study.	N= 10 OS tool: teleworking / videoconference system (eHAB - NeoRehab) Duration= the participants attended a single session, in which they were	The effectiveness and reliability of a physical examination of online physiotherapy service for the diagnosis of musculoskeletal disorders of the elbow.	There was substantial agreement and almost perfect validation for intra-rater reliability. However, for inter-rater reliability, there was a weak and non-	Performing a physical rehabilitation exam to determine a musculoskeletal diagnosis of the elbow joint complex is valid and reliable, especially when considered by the same evaluator.

			interviewed and a physical exam was carried out in person and a remote physical exam for later comparison.		significant agreement.	
MOFFET et al., 2015 ¹⁴	Online physiotherapy service after hospital discharge of patients with total knee arthroplast.	Clinical trial.	N= 205 OS tool: videoconference (Tandberg 550 MXP technology platform; Cisco Systems) Duration: 16 sessions G1: intervention with online physiotherapy service. G2: traditional clinical physiotherapy.	The equivalence of online physiotherapy service by videoconference, compared to conventional rehabilitation in patients with total knee arthroplasty.	In general, there was no difference between groups in the moments after the intervention and two months after the end of rehabilitation.	The results demonstrated the non-inferiority of the online physiotherapy services and support its use as an effective alternative to providing services, after hospital discharge of patients after total knee arthroplast.
NELSON et al., 2020 ⁴	Online physiotherapy service after hip arthroplasty.	Clinical trial.	N= 70 Duration = 6 weeks G1 = control group. G2 = intervention group.	The effectiveness of online physiotherapy service application-based, used by iPads, compared to conventional rehabilitation, in patients after total hip arthroplasty.	Intervention via online physiotherapy service did not demonstrate inferiority in balance, strength and satisfaction	This study demonstrates that the online physiotherapy service can be used in patients with THA maintaining high levels of satisfaction.
ODOLE; OJO, 2013 ¹³	Online physiotherapy service over the phone for patients with osteoarthritis.	Clinical trial.	N= 50 OS tool = mobile phone Duration = 6 weeks G1= clinical. G2= physiotherapy call center.	The effectiveness of online physiotherapy service via telephone calls in the treatment of physical pain in patients with knee osteoarthritis.	The online physiotherapy service achieved the same result as conventional physiotherapy.	The online physiotherapy service is effective in the treatment of patients with knee osteoarthritis, the improvement in pain intensity and physical function of the patient is evident after six

						weeks of call center intervention.
PASTORA-BERNAL et al., 2018 ⁵	Costs of online physiotherapy service for patients after subacromial decompression .	Clinical trial.	N = not displayed. OS tool = (videoconference, videos, images) Duration = 12 weeks G1 = intervention by physiotherapy call center. G2 = traditional physiotherapy.	The costs of online physiotherapy service in the rehabilitation after subacromial decompression surgery, when compared to conventional physiotherapy.	The analysis of the estimated total cost shows a preliminary cost differential in favor of the group with online physiotherapy service.	This study concluded that there was a trend towards lower health costs via online physiotherapy services.
PIGA et al., 2014 ¹²	Online physiotherapy service for rehabilitation of hand function in patients with systemic sclerosis (SS) and rheumatoid arthritis (RA)	Clinical trial.	N = 20 (10 with SS and 10 with RA) OS tool = call center system (portable device with a telemonitoring infrastructure) Duration = 12 weeks G1= patients with systemic sclerosis. G2= patients with rheumatoid arthritis. G3 = control group (SS). G4 += control group (RA).	The non-inferiority of online physiotherapy service compared to conventional rehabilitation for patients with systemic sclerosis and rheumatoid arthritis.	There were no statistically significant differences in the outcomes measures between the treatment methods.	The online physiotherapy services of self-administered kinesiotherapy programs is a promising approach to the rehabilitation of hand function in patients with rheumatic disease.
RICHARDSON et al., 2017 ⁶	Online physiotherapy service applied in musculoskeletal disorders of the knee.	Repeated measurement design.	N = 18 OS tool= eHAB physiotherapy call center system. Duration = not displayed.	The reliability of online physiotherapy service for assessing the knee complex compared to face-to-face assessment.	A high level of intra-examiner reliability (89%) and a moderate level of inter-	Evaluation by online physiotherapy service of the knee complex appears to be viable and reliable.

					examiner reliability (67%) was evident for online physiotherapy service assessments.	
TOUSIGNANT et al., 2015 ¹¹	Costs of the online physiotherapy service.	Clinical trial.	N= 197 OS tool = videoconference Duration = 8 weeks G1= physiotherapy call center. G2= home visit.	The lower cost of online physiotherapy service videoconference compared to rehabilitation with home visits.	The difference in values between the two treatment methods was not significant.	The cost of online physiotherapy service compared to conventional rehabilitation was less or approximately the same (depending on the distance between the patient's home and the health center).
RUSSEL et al., 2010 ³	Online physiotherapy service applied in musculoskeletal disorders of the ankle.	Repeated measurement design.	N = 15 OS tool= eHAB physiotherapy call center system. Duration = not displayed.	The reliability of online physiotherapy service through videoconference, in the assessment of ankle disorders	There was a high level of reliability in assessments via online physiotherapy service in patients with ankle pain.	Musculoskeletal assessment via online physiotherapy service is reliable.
STEELE et al., 2012 ⁷	Costs of the online physiotherapy service.	Clinical trial.	N = 22 OS tools= eHAB physiotherapy call center system. Duration = not displayed.	The effectiveness of online physiotherapy service in the assessment and diagnosis of shoulder complex disorders.	According to the diagnoses, the method was considered valid and reliable when compared to the conventional method.	This study proved the effectiveness of the assessment of shoulder disorders through the online physiotherapy service.

n= number of participants; OS= online service; THA= total hip arthroplasty.

4 DISCUSSION

Regarding the discussed topic in this literature review, a vast amount of studies was found. From the studies found and included it was observed that a large part of them analyzed the online physiotherapy service in comparison to the traditional service with adapted strategies and methods to enable the remote service.

Regarding to the orthopedic and rheumatic disorders treatments, the findings show that the online physiotherapy service treatment for the rehabilitation of the hand seems to be effective, with improvements in general physical function¹². Accordingly, online physiotherapy service patients have less pain and disability at the end of the treatment for chronic neck pain, in addition to greater adherence to exercises⁸. However, there is no significant difference between the online physiotherapy service and the traditional physiotherapy in the pain intensity and physical function of patients with knee osteoarthritis¹³. In general, it is possible to observe that, independent of the disorder, the patients present a good satisfaction with the remote online service. In addition, this method has proven to be effective.

Some studies approached the patient assessments by the online physiotherapy service^{3,6,7,9}. It was noticed that the musculoskeletal evaluation of the knee, ankle, shoulder and elbow joint complex can be successfully performed via online physiotherapy service, because it appears to be as valid, reliable and acceptable as the traditional face-to-face evaluations^{3,6,7,9}. However, some limitations must be highlighted, such as auto palpation, accuracy of tests, problems with connectivity, and video and audio quality^{3,6,7,9}.

Given the presented results, it can be considered that the online physiotherapy service (videoconference, mobile phone calls, apps for online physiotherapy service and app combined with video conference) methods are reliable and satisfactory and did not show major differences when compared with the traditional face-to-face physiotherapy. However, in addition to the used technique, the patient's interpretation and motivation concerning what was proposed must be considered⁶.

Another important aspect that deserves to be highlighted is the cost of this therapy method. The online physiotherapy service is more accessible than providing the same service face-to-face¹¹. Additionally, the actual cost analysis shows a cost differential in favor of the online physiotherapy service, which means that for the total intervention of each participant, the remote rehabilitation saves from 22 to 29% of the costs compared to the conventional face-to-face rehabilitation. This could be a new way to improve rehabilitation services budget, thus encompassing a much larger population⁵. Considering the findings, the online physiotherapy service would reduce waiting times and transportation costs, especially for the patients who live far from the clinic¹³.

Thinking about the current scenery, in which millions of people have died by the new coronavirus, the presented study is of great relevance considering its role in

controlling the spread of this virus, since it presents online physiotherapy service strategies, a new subject, a new subject that needs to be further explored. Despite the importance of this literature review, some aspects could be improved in further studies, such as covering more physiotherapy areas, considering that it includes only orthopedic and rheumatic disorders; improving the level of scientific evidence, through a systematic review and performing searches in more databases, in order to include a greater number of studies.

5 CONCLUSION

The results of the present study suggest the efficacy, the reliability and validity of the online physiotherapy service in the treatment of orthopedic and rheumatic disorders, showing no differences when compared to the traditional face-to-face rehabilitation. This method, carried out through videoconference, cell phone call, and physiotherapy service system combined with videoconference, can also provide benefits such as reduction of cost and waiting time, and ease of access, presenting itself as a fundamental resource in some scenarios, as the current scenario of the new coronavirus pandemic (SARS-CoV-2).

REFERENCES

1. Caetano R, Silva AB, Guedes ACCM, et al. Challenges and opportunities for telehealth in times of the pandemic by COVID-19: a reflection on spaces and initiatives in the Brazilian context. *Cad Public health*. 2020;36(5):e00088920. doi:10.1590/0102-311x00088920
2. Hailey D, Roine R, Ohinmaa A, Dennett L. Evidence of benefit from telerehabilitation in routine care: A systematic review. *J Telemed Telecare*. 2011;17(6):281-287. doi:10.1258/jtt.2011.101208
3. Russell TG, Blumke R, Richardson B, Truter P. Telerehabilitation mediated physiotherapy assessment of ankle disorders. *Physiother Res Int*. 2010;15(3):167-175. doi:10.1002/pri.471
4. Nelson M, Bourke M, Crossley K, Russell T. Telerehabilitation is non-inferior to usual care following total hip replacement — a randomized controlled non-inferiority trial. *Physiother (United Kingdom)*. 2020;107:19-27. doi:10.1016/j.physio.2019.06.006
5. Pastora-Bernal JM, Martín-Valero R, Barón-López FJ. Cost analysis of telerehabilitation after arthroscopic subacromial decompression. *J Telemed Telecare*. 2018;24(8):553-559. doi:10.1177/1357633X17723367
6. Richardson BR, Truter P, Blumke R, Russell TG. Physiotherapy assessment and diagnosis of musculoskeletal disorders of the knee via telerehabilitation. *J Telemed Telecare*. 2017;23(1):88-95. doi:10.1177/1357633X15627237
7. Steele L, Lade H, McKenzie S, Russell TG. Assessment and diagnosis of musculoskeletal shoulder disorders over the internet. *Int J Telemed Appl*. 2012;2012. doi:10.1155/2012/945745
8. Gialanella B, Etti T, Faustini S, et al. Home-Based Telemedicine in Patients with Chronic Neck Pain. *Am J Phys Med Rehabil*. 2017;96(5):327-332. doi:10.1097/PHM.0000000000000610
9. Lade H, McKenzie S, Steele L, Russell TG. Validity and reliability of the assessment and diagnosis of musculoskeletal elbow disorders using telerehabilitation. *J Telemed Telecare*. 2012;18(7):413-418. doi:10.1258/jtt.2012.120501
10. Bini SA, Mahajan J. Clinical outcomes of remote asynchronous telerehabilitation are equivalent to traditional therapy following total knee arthroplasty: A randomized control study. *J Telemed Telecare*. 2016;23(2):239-247. doi:10.1177/1357633X16634518
11. Tousignant M, Moffet H, Nadeau S, et al. Cost analysis of in-home telerehabilitation for post-knee arthroplasty. *J Med Internet Res*. 2015;17(3):1-12. doi:10.2196/jmir.3844
12. Piga M, Tradori I, Pani D, et al. Telemedicine applied to kinesiotherapy for hand dysfunction in patients with systemic sclerosis and rheumatoid arthritis: Recovery of movement and telemonitoring technology. *J Rheumatol*. 2014;41(7):1324-1333. doi:10.3899/jrheum.130912

13. Odole AC, Ojo OD. A Telephone-based Physiotherapy Intervention for Patients with Osteoarthritis of the Knee. *Int J Telerehabilitation*. 2013;5(2):11-20. doi:10.5195/ijt.2013.6125

14. Moffet H, Tousignant M, Nadeau S, et al. In-home telerehabilitation compared with faceto-face rehabilitation after total knee arthroplasty: A noninferiority randomized controlled trial. *J Bone Jt Surg - Am Vol*. 2015;97(14):1129-1141. doi:10.2106/JBJS.N.01066